

To: Mahmud, Shahid[Mahmud.Shahid@epa.gov]; Archer, Allie[Archer.Allie@epa.gov]; Fagen, Elizabeth[Fagen.Elizabeth@epa.gov]
From: Hoogerheide, Roger
Sent: Sun 8/16/2015 3:48:05 PM
Subject: FW: The Animas River has been worse - the flood of 1978

From: Ekstrom, Karen [mailto:EkstromKL@cdmsmith.com]
Sent: Friday, August 14, 2015 1:51 PM
To: Vranka, Joe; DalSoglio, Julie
Cc: Hoogerheide, Roger; klarge@mt.gov
Subject: Fwd: The Animas River has been worse - the flood of 1978

Hi all,

I wanted to share this info that Curt Coover dug up on a previous spectacular blowout on the Animas in the 1970s. It's from the USGS.

It gives some perspective on the current situation in terms of previous impacts to drinking water and how the river recovers.

I hope it is interesting to you and maybe useful.

Karen

Sent from my Verizon Wireless 4G LTE smartphone

----- Original message -----

From: "Coover, Curt"

Date:08/14/2015 11:56 AM (GMT-07:00)

To: "Frandsen, Angela" , "Anton, Nicholas" , "Emilsson, Gunnar" , "Ekstrom, Karen" , "Alexander, Robert" , "Shanight, David" , "Whiting, Kent"

Subject: The Animas River has been worse - the flood of 1978

“One dramatic event did adversely affect the Animas River for a short time in 1978. Standard Metals Corp. was mining the Spur Vein, a high-grade gold vein in the Sunnyside (mine # 116) 85 ft below Lake Emma, located at 12,300 ft elevation in Sunnyside basin (fig. 23). About 6:00 p.m. on Sunday, June 4, 1978, Lake Emma broke through into the 2580 Stope on C level, flooding the mine on the only day of the week when no miners worked underground (fig. 27). The effect on the mine was cataclysmic, stripping timbers from the main shaft, crushing equipment, and filling tunnels with mud. At the Gladstone portal (mine # 96, fig. 1) an estimated 5 to 10 million gallons of water blew out the walls of the portal building under the pressure of a 1,700-ft head from the lake and covered everything with black mud (figs. 28 and 29). Sheriff Virgil Mason, on his way to the Gladstone portal, told reporters he saw “*a wave that must have been eight to ten feet high rushing down the creek. At the portal it was like a UFO movie. Everything was black and timbers were shooting out like they were shot from a launcher*” (Daily Sentinel, June 11, 1978). Alongside other townspeople, the author, who was employed by Standard Metals as an assayer at the time, watched Cement Creek flood. Main shaft timbers floated by in the roiling black water, which smelled strongly of diesel fuel and sulfides, but the tension of the close call with human tragedy outweighed any thoughts of the environmental effect of the event being witnessed.

Standard Metals Corp. explained the cause of the accident briefly in its Annual Report issued in May 1979:

Studies of the breakthrough, made on behalf of the Company, have indicated that it was caused by a fault, filled with glacial till and other gangue material, which resulted in substantial amounts of water, mud and debris entering the mine, and blocking entrance through the tunnels.

Indeed, unknown to the miners and geologists, thousands of years before, glaciers had gouged a crack along the weak vein rock that was filled with permafrost sediments. Heat from the mine melted the frozen mud and Lake Emma drained into the stope (R.C. Dwelley, Cripple Creek, Colo., oral commun., 1985). One of the first mine geologists to examine the hole found clear glacial ice embedded in the fault (F.D. Taylor, Silverton, Colo., oral commun., 2003).

The Animas River turned black from the glacial mud and sediment well past Farmington, N. Mex., more than 70 mi downstream (fig. 30). (An analysis of the Lake Emma sediment discharged is in table 1 of Church, Fey, and Unruh, this volume.) The towns of Durango and Aztec had to shut off intake of water at their pumping plants to prevent the polluted water from entering municipal water systems. Samples taken by health officials in Durango showed levels of

12.6 mg/L zinc and 4 mg/L lead in the water [*NOTE for reference, the samples collected at Durango so far this year had less than 80 µg/L zinc and less than 2 µg/L lead.*] , and warnings were issued not to drink the water (Daily Sentinel, June 11, 1978). At the time of the event, most downstream users and the press thought this contamination was from mill tailings in Lake Emma. This was unlikely because the early Sunnyside mills (sites # 158, 165, fig. 2) were built considerably downstream of Lake Emma. The first Sunnyside Mill (site # 113) was built at or just below the outlet of Lake Emma, which was dammed to provide process water to the mill. Photographic evidence suggests the mill's tailings were probably discharged into Eureka Creek. Part of the B Level waste dump was deposited in the lake and sloughed in further due to the mine collapse. Natural metal content of the lake sediments as well as metals washed from the mine workings probably accounted for the metal loading. Large chunks of ore from the collapsed 2580 stope never made it past the Gladstone portal and were recovered and milled during the 2-year mine clean-up. Little ore was found in the Terry tunnel, the mine's upper entrance (# 120). Instead, these workings were filled with a black sticky mud, similar to that observed in the exposed lake bottom. Considerable mud-laden water also discharged from this portal, though in a less spectacular fashion, and blackened Eureka Gulch and the Animas River between Silverton and Eureka."

<http://pubs.usgs.gov/pp/1651/> This is a very large study of the watershed. Lots of reports.